



Customer choice patterns in passenger rail competition



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ABSTRACT

This study explores determinants of customer choice behaviour in passenger rail competition on two cross-border routes, Cologne–Brussels and Cologne–Amsterdam. It fills a gap in the literature on competition in commercial passenger rail by relying on newly collected stated preference data from about 700 on-train interviews. Our multinomial Logit estimations reveal two important effects that are closely connected to (psychological) switching costs. First, the customers on the route Cologne–Amsterdam, for whom competition is a purely hypothetical situation, value a competitive market structure lower than customers on the already competitive route Cologne–Brussels. Second, travellers show a status quo bias with a preference for the service provider on whose trains they were interviewed. This effect goes beyond the impact exercised by explanatory variables capturing the observable differences of the services and customers, including loyalty-enhancing effects like the possession of customer cards. Our results imply that entry into the commercial passenger rail market may be more difficult than often thought. Thus, the study contributes to explaining the low level of competition in these markets in Europe.

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1. Introduction

In the light of the ongoing liberalisation of the commercial passenger rail markets in Europe this study explores the determinants of customer choice behaviour in commercial passenger rail markets on two cross-border routes, Cologne–Brussels and Cologne–Amsterdam. Several national rail markets have been opened to on-track competition starting in the 1990s including Germany, the UK, Austria, Italy and Sweden. In 2010 international services within Europe were also liberalised and the EU Commission has announced a proposal in 2012 for full market opening. Despite this *de facto* openness of a number of commercial passenger rail markets there has yet been only little entry. In 2011 shares of entrants in domestic markets lay below 1% and only three cross-border lines were operated under the open access regime (Warnecke and Götz, 2012), with Brussels–Cologne as the only route with some degree of on-track competition. The 2012 timetable has seen few new open access operators on national and international lines. NTV in Italy and WESTbahn in Austria are the most prominent entry cases.

Our research provides demand-induced reasons for the observed difficulties in establishing competition in these markets. Therefore, we add to the literature on entry and competition in commercial passenger rail markets (see for example Preston et al., 1999; Preston, 2009; Steer Davis Gleave, 2004; Ivaldi and Vibes, 2008; Friederiszick et al., 2009). These theoretical and empirical studies suggest that intramodal competition is feasible to a limited extent only. This is because some characteristics of the market complicate entry, for example strong economies of density, potential economies of scale, network effects and vehicle investments with a high risk of sunk costs.

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The existing studies usually model demand for rail transportation as a function of major mode choice determinants such as price, travel time, frequency and certain quality indicators. Our study contributes to the literature on the demand for passenger rail services by empirically identifying switching costs (Klemperer, 1995) and a status quo bias (Samuelson and Zeckhauser, 1988) in passengers' choices among different intramodal service operators. Switching costs have, for example, been studied for airlines, credit cards, cigarettes, supermarkets, phone and electricity services (see Farrell and Klemperer (2007: 1981) for an overview) but have not been researched for the passenger rail market, yet. This was mainly due to a lack of empirical information on the choice determinants of rail customers.

Our analysis of customer preferences in intramodal competition is based on 700 interviews with passenger rail customers on two international routes. We choose Cologne–Brussels as the only route in Europe with significant and established on-track competition and Cologne–Amsterdam as a reference case with a cooperative service. In the main part of the interviews passengers on these routes were asked to state their preferences for three service alternatives by bringing these alternatives into a rank order. The alternatives comprise services offered by an entrant, an incumbent or a cooperation among the two firms. The latter represents the status quo of international rail services in Europe. The in total 21 scenarios differ in the prices of the three alternatives. In addition, we collected information on the socio-economic characteristics of the travellers and on the reasons and characteristics of their journeys.

We econometrically analyse and compare the preferences of travellers on the competitive route (Cologne–Brussels) and the cooperative route (Cologne–Amsterdam). This is done by estimating a multinomial Logit discrete choice model for both markets as it has become standard in transport modelling (see, for example, Louviere et al., 2000). In line with Oum et al. (1990) we for example identify travel purpose, travel class and prices as main influencing factors for rail customers' choice between different rail services. With regard to switching costs, which we specifically aim to identify, we for example confirm strong influences of customer cards for the passenger rail market.

Based on these estimations we determine the mode choice probabilities of the respondents, i.e. their likeliness of choosing the service of the entrant, the incumbent, or a cooperation of the two. The estimated probabilities enable us to compare the preferences on the route with established competition to those on the route served in cooperation. Moreover, we compare customers' preferences for the hypothetical entrant RailX on the route Cologne–Amsterdam to those for the well-known entrant Deutsche Bahn on the route Cologne–Brussels. These comparisons suggest that travellers are subject to a status quo bias in favour of the better known company (see for example Hensher, 2009) and/or the better known market structure which goes beyond the impact exercised by the explanatory variables considered in the estimations. These include price, the possession of loyalty cards, being a frequent traveller or being offered a connection without the need to switch trains.

The dataset presented in this paper and the econometric analysis more than complement prior research. By highlighting the importance of switching costs and psychological factors of travel choice which can lead to a status quo bias we provide a novel view on competition in commercial passenger rail transport. These effects are likely to impact both the view on the market potential of entrants as well as the welfare consequences of competition in these markets.

These points are illustrated in greater detail below. Section 2 reviews the related literature. The survey design and the data collected are presented in Section 3. In Section 4, we specify a function for the utility that travellers receive from consuming rail transportation services and estimate the parameters of this function from the data collected. Based on the estimation results, we calculate choice probabilities for the cooperation and the entrant and discuss the effects of switching costs in Section 5. Section 6 concludes.

2. Related literature

In this section, we show how our paper relates to existing literature on commercial passenger rail transport.³ Moreover, we give an overview on relevant (psychologically motivated) effects that arise when customers choose between competing products.

2.1. Competition in commercial passenger rail transport

A comprehensive study on passenger rail competition was carried out by Preston et al. (1999) who perform a simulation-analysis on the potential for on-track competition in the UK passenger rail industry and its welfare effects. They focus on the intramodal effects, but take intermodal shifts into account. On the demand side they use stated and revealed preference data obtained from a survey which looks at customer choices of preferred departure times, ticket types, class and mode of travel on a specific UK route. The analysed scenarios vary in the price levels of entrant and incumbent and in the interavailability of tickets. They find that a few entry scenarios could be attractive, e.g. cream-skimming and niche entry through product differentiation, but also conclude “that on-track competition can increase benefits to users but usually reduces welfare because of greater reductions in producer surpluses” (Preston et al., 1999: 92).

The same model is used for a simulation of competition in the Swedish market (see Preston, 2009), in which a major difference are the lower track access charges. For Sweden the model indicates that head-on competition could also be commercially feasible on the important intercity routes. Steer Davis Gleave (2004) use a similar approach to model the effects of

³ The focus of our study is on intramodal competition. Related studies that examine the effect of intermodal competition between (high speed) rail and air transport are for example Friebe and Niffka (2009), Román et al. (2007) and Behrens and Pels (2012).

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